

SURVEYING A LAKE WATERSHED

Data Collection Forms



GUIDANCE FOR COMMUNITY VOLUNTEERS IN MASSACHUSETTS

Data sheets based on materials from

Massachusetts Department of Environmental Protection
Massachusetts Riverways Programs, Adopt-A-Stream Program,
Department of Fisheries, Wildlife, and Environmental Law Enforcement
Massachusetts Water Watch Partnership
Maine Department of Environmental Protection

2001

Tips for Surveying a Lake and Pond Watershed

The purposes of this survey are to organize residents and officials of communities to work together to solve problems and to protect resources of lakes and ponds. The survey, a cooperative venture, is a primary step in this process. In addition, the success of the survey depends upon volunteers and landowners. Before the survey takes place, all landowners need to be invited to participate in the survey, notified of purposes of the survey, and have an opportunity to give permission for volunteers to walk their property.

This survey form is designed for use with the *Massachusetts Volunteers Guide for Surveying a Lake Watershed and Preparing an Action Plan* (2001). To ensure that the survey is successful, volunteers should be aware of the following safety tips.

Safety and Legalities

- ◆ Always walk with someone.
- ◆ Watch out for irate dogs. Walk cautiously and practice good dog etiquette.
- ◆ Do not drink the water.
- ◆ Lifejackets are required by law for each person in any canoe or boat.
- ◆ From September 15 to May 15 all canoe or kayak occupants must wear a U.S. Coast Guard Approved Personal Flotation Device.
- ◆ Wear long-sleeved shirts and pants to protect against, ticks, mosquitoes, poison ivy, and nettles.
- ◆ Wear insect repellent if necessary.
- ◆ Consider landowner rights. Ask permission to cross private land, posted or not.
- ◆ Do not enter posted areas without permission. Take advantage of public access points.

Environment:

- ◆ Don't walk on unstable banks; your footsteps could speed erosion.
- ◆ Be aware of wildlife and animal homes, for both of your sakes.

NEVER PUT YOURSELF IN DANGER TO GATHER SURVEY INFORMATION.

If at anytime you feel uncomfortable about the bank or waterbody conditions or surroundings, please STOP your survey. You and your safety are much more valuable than any of the objectives of the watershed survey.

Checklist: What to take on your survey

- ___ A buddy
- ___ Data forms and topo map
- ___ Clipboard or other surface for writing
- ___ Two pencils – color is good to mark on maps
- ___ Long-sleeved, snag-free clothing /pants (for bugs and thorns)
- ___ Sunblock
- ___ Sunglasses (polarized to see into the water better)
- ___ Lifejackets & paddles if canoeing
- ___ Camera and film
- ___ Gloves
- ___ Copy of letter sent out to landowners
- ___ Flashlight for checking culverts

Optional

- ___ Rubber boots or waders
- ___ Yardstick or measuring tape (useful for pipes)
- ___ Compass
- ___ Field guides (in ziplock bags)
- ___ Food, for energy!

Fill out your data sheets, get them to your team leader, and attend action planning meeting, which will be held on: _____

LAKE and POND WATERSHED PRESURVEY FORM

Lake and Watershed Name: _____
Survey Area Number: _____
Surveyors Names: _____

A. Description of the Area from a Topographic Map (*Maps will be available at the training session.*)

1. Do you see developed (*white*) and undeveloped areas (*green*)? What % of each do you see?
_____ % developed _____ % undeveloped
2. Are the banks of either the tributary or shoreline steep, (*How close together are the contour lines?*) indicating a potential for increased runoff or erosion?
_____ Yes _____ No
3. How many tributaries enter or cross your area?
4. What kinds of development are shown on the map? (*Include major development in the watershed, as well as the shoreline, that could have an impact on the lake.*)

B. General Categories of Land Uses in your Area

_____ % Construction
_____ % Residential
_____ % Roads
_____ % Agricultural land
_____ % Urban
_____ % Logging/forestry
_____ % Other (*please specify, e.g. , rural, open, or recreational*) _____

C. If Residential (*Estimate % of area; information will be available at the training.*)

_____ Multifamily _____ year round
_____ <1/4 acre lots _____ seasonal
_____ 1/2-1 acre lots
_____ >1 acre

D. Is the area sewered? _____ or unsewered _____?

E. Watershed History and Characteristics *What do people know about this area?*

General description: _____

Historical information: _____

Problems to look for during site visit: (*e.g., If there is a new development near a stream, you will want to look upstream and downstream of the site for evidence of erosion and sedimentation and excessive vegetation in the stream. If you see erosion downstream of the development you may be able to track the problem back to its source.*)

1. _____

2. _____

3. _____

LAKE and POND **WATERSHED SURVEY** FORM

Lake and Watershed: _____ Survey Date: _____
 Surveyors Names: _____
 Area Number: _____
 Site Location: Beginning _____ End: _____
 Weather Today: _____ Weather (past 2-5 days) _____
 Landowners Contacted During Survey: ____yes ____no
 Description: Is the lake or pond a... *(Please check)*
 ____ Naturally occurring lake or pond ____ Lake or pond created by a dam ____ Salt pond

A. General Categories of land uses on the Problem Site *(Identify the land use category on the problem site. May be more than one land use.)*

____ % Construction ____ % Agricultural land
 ____ % Residential ____ % Urban
 ____ % Roads ____ % Logging/forestry
 ____ % Other *(please specify, e.g. , rural, open, or recreational)* _____

A.1. Specific Land Use on the Problem Site *(Estimate % of site in each use. May be more than one land use.)*

____ commercial	____ dirt road	____ protected open space
____ industrial	____ local road	____ undeveloped land
____ junk yard	____ parking lot	____ meadow
____ railroad	____ golf course	____ forest
____ bridge	____ grazing/pasture	____ wetland
____ highway	____ park or beach	____ other <i>(specify)</i> _____

A.2. If Residential *(Estimate % of site that is...)*

____ Multifamily ____ year round
 ____ <1/4 acre lots ____ seasonal
 ____ 1/2-1 acre lots
 ____ >1 acre (400 x 100 feet)

B. Site characteristics

1. Dominant soil is...

____ rock ____ gravel ____ sand ____ silt ____ clay

2. Slope of site is...

____ flat ____ moderate ____ steep

3. The bank is... *(Check a or b, if there is a stream, ditch, shoreline, or steep bank on site.)*

a) ____ vegetated with...	b) ____ unstable and...
____ exposed roots	____ undercut
____ shrubs and native grasses (< 20 feet)	____ eroded
____ trees taller than 20 feet	

4. The width of the band of trees, shrubs, or grasses covering the bank or extending outward from it is...

____ 0-5 feet ____ 5-50 feet ____ 50-100 feet ____ greater than 100 feet

5. The % of the bank area that is covered by each of these vegetation types is...

____ % little or none ____ % grasses ____ % shrubs ____ % trees (>20 feet)

6. Cover (estimate shading between 10 A.M. and 2 P.M.)

0-25% ____ 25-50% ____ 50-75% ____ 75-100% ____

LAKE and POND WATERSHED SURVEY FORM

(Continued, page 2)

C. Site drainage

1. Site runoff is directly to...

___lake ___stream ___ditch ___catch basin ___vegetated buffer ___wetland other (describe) _____

2. Site runoff is from...

Construction: ___disturbed areas <1 acre) ___disturbed areas >1 acre

Residential: ___<1 acre ___>1 acre and ___driveways ___lawns

Roads: ___pavement to catch basin ___bridge ___shoulders/country drainage

Agricultural: ___field ___animal grazing area ___manure storage area

Urban: ___parking lot ___vehicle maintenance yard ___industrial area ___waste storage area

Logging/Forestry: ___logging yard ___roads/trails ___stream crossings ___forested areas

D. Land disturbances that affect water quality

1. Do you see evidence of excess nutrients? (Check all that apply)

___**Soil erosion:** ___silt ___sand ___soil ___stockpiled soil ___sedimentation

___**Evidence of runoff:** ___gullies ___rills ___channel

___**Evidence of nutrients:** ___pet waste/manure ___fertilizer use ___green lawns other(specify) _____

2. Do you see any of the following? (Use the same land use categories that were selected for the site.)

Construction: ___exposed soil ___altered drainage pathways ___absence/failure of erosion controls

Residential: ___exposed soil ___lush lawns ___evidence of erosion ___pet waste ___pipe drains

Roads: ___drainage to waterbody ___evidence of erosion ___sediment in ditches/culverts/drains

___sand build up in road

Agricultural: ___exposed soil ___animals in waterbody ___storage areas uncovered

Urban: ___drain pipes to waterbody ___sediment in ditches/culverts

___paved areas near waterbodies ___trash/waste storage near waterbodies

Logging/forestry: ___exposed soil ___poor roads ___brush/slash near waterbodies

Other: ___(specify) _____

3. Do you see any of the following? If there are tributaries, catchbasins, drain pipes, and/or culverts on the site, explain your observations.

___Tributaries bringing in siltation: _____

___Condition of the culvert/pipe: _____

___Describe what is going into the pipe (add color and odor): _____

___Describe any discharge from the pipe (add color and odor): _____

___Try to obtain and attach a map of the drainage system through your site/area.

E. Water quality concerns (Check all that apply, describe the location and cause, and indicate site on map)

___Oily sheen or smell: _____

___Sewage: (odor, milky color, toilet paper) _____

___Foam or scum: (does a stick break it up? If it does, foam is probably natural.) _____

___Fishy odor or fish kill: _____

___Algae or aquatic weeds (excessive growth): _____

___Floating trash: _____

___Obvious sedimentation: (e.g., sand) _____

F. Habitat and wildlife (Evidence of...)

___Fish: (fish, fish nests, anglers) Identify species if known _____

___Other aquatic life: ___insects, ___turtles, ___frogs, ___snails, ___mussels, ___clams, other: _____

Identify species if known: _____

___Waterfowl: ___herons, ___ducks, ___geese, ___loons, other _____

___Areas of good habitat with wildlife: Describe _____

Lake Watershed Survey

Area Summary Sheet 1: Narrative

Area begins: _____

Area ends: _____

Date: _____
Surveyors: _____
Today's weather: _____
Weather over past 24-48 hours: _____

These sheets are designed to (1) give the "big picture" of your area, and (2) describe the problems you have seen that could contribute to impaired water quality in the waterbodies of your watershed. The problems you have seen should be marked on your map (A, B, C, D) and described here. Identify the source of the problem whenever possible. This information provides the basis of the narrative description in your Lake or Pond Watershed Survey Report.

NARRATIVE DESCRIPTION

Sample.

We surveyed the south side of the pond from Oak to John Street. **(A)** There is a small stream, (about 1.5 feet across and 0.5 inches deep) that comes in just east of 3 Oak Street. The stream has a deep tea color but does not smell or have any algae. The bottom of the lake in this area is covered with decaying leaves/muck. This area also has woods coming up to the pond edge- a really well established vegetated buffer and lots of song birds. **(B)** From 3 to 17 Oak Street, people's lawns come up to the edge of the water-no buffer. Some dumping of yard wastes close to the shoreline.

(C) Lots of illegal dumping- at the end of the maintenance access road for Rte. 13 (mostly construction type stuff)! There are 3 large erosion gullies beneath the pipes sticking out of the embankment (from the storm drains on the highway), and there is a large delta of sand forming in the water beneath the embankment. Smells like gasoline and there was a sheen in the water trapped by the tires. This area could be cleaned up and it would make a great boat ramp area. Plant a few trees and it would be a nice place to sit-the view is nice. Can we get permission from Mass Highway to do clean up work near Rte. 13?

(D) There is a thick coating of duckweed along the edge of "Ball Park Cove" and the rest of the cove is thick with milfoil, (a neighbor says it is milfoil-we are not sure). The storm drain across from a new subdivision, (intersection of Oak and John Streets), is clogged with dirt from the construction site.

Describe your area in a paragraph:

Lake Watershed Survey
Area Summary Sheet 2: Priorities for Action

Area begins: _____
Area ends: _____

Look back at your data sheets and include your observations. The information from this sheet will be used to develop the Watershed Survey Report and Action Plan.

PROBLEMS: Problems found in your area, such as pipes or culverts discharging in dry weather, erosion, runoff, trash, dense algae, water quality problems (odor, color, oil, foam, sewage), and degraded wetlands (phragmites, loosestrife) <i>(Describe and give location)</i> .	ASSETS: Assets found in your area, such as good habitat, wildlife species, businesses, or landowners using the river (in a friendly way), recreational access (canoe, trails, parks), potential recreational access, and potential park/conservation land <i>(Describe and give location)</i> .	PRIORITIES FOR ACTION: List items that you feel would help to address or correct the priority problems in column 1.
1.	1.	1.
2.	2.	2.

MAPPING PAGE

Survey area:_____ Begin:_____ End:_____

Surveyors:_____

Date:_____ Weather today:_____ Weather past 48 hours:_____

Draw a birds-eye view of your problem site, showing vegetation types and canopy along the streambank or shoreline, land uses, and other features. Include any details such as pipes, drainage ditches, or connections to wetlands or tributaries. Add assets such as habitat, recreation, and open space. If there is enough room write a brief description next to the problems found on site. If you need more room, label the problems A,B, C, on the map and describe these problems on the Narrative Summary Sheet. Be sure to include the following information : (1) where you have taken photos --use arrow showing direction, include photo number, (2) Mark problems, assets, and photo numbers on topographic map of your area. (*See sample on reverse side.*)